REMARKS

Claims 1-16 were pending in the application. By this amendment, Applicants have amended claims 5 and 12 and have added new claims 17-23 in order to more fully claim what Applicants regard as their invention. Accordingly, Applicants present claims 1-23 to the Examiner for consideration.

Whereas claim 7 is presently withdrawn from consideration as being drawn to a non-elected species, Applicants respectfully request reconsideration and allowance of this claim upon the allowance of a generic claim (*i.e.*, claim 5 from which claim 7 depends).

I. INTRODUCTION

The present invention is generally directed to compositions that are suitable for use in deploying safety air bags in automobiles. The inventive compositions comprise at least one fuel, at least one oxidizer for the fuel, and at least one slag trap comprising chemically-inert particles that have a high specific surface area in order to effectively trap slag formed during combustion of the composition. *See* claim 1. In a preferred embodiment, the chemically inert particles are in "highly dispersed form" in order to have an even higher surface area compared to metal oxides in conventional form. Application, p. 9, last paragraph. Examples of preferred slag trap particles include Aluminiumoxid C, Titanoxid P25 and VP Zirkonoxid, sold by Degussa AG. Application, p. 9, middle paragraph.

In one embodiment, part of the slag trap particles can also serve as a carrier for a catalyst such as platinum metal, platinum metal alloys or copper alloys. Application, p. 12. The catalyst is preferably included as a catalytically effective layer (*e.g.*, monolayer) on the slag trap

particles. *Id.* Preferred catalyst particles include Al_2O_3 as the highly dispersed carrier and Pt, Pd or Cu as the metal catalyst. *Id.*

II. OBJECTION TO ABSTRACT

The Office Action objects to the Abstract on the grounds that it contains the word "said". In response, Applicants have amended the Abstract to replace "said" with --such--. Accordingly, Applicants believe this objection is now moot.

III. REJECTIONS UNDER 35 U.S.C. § 112, SECOND PARAGRAPH

The Office Action rejects claim 5 under 35 U.S.C. § 112, second paragraph, on the grounds that claim 5 is indefinite, particularly with respect to the slag trap particles (c) recited in claim 1 being a carrier for a catalyst. In response, Applicants have amended claim 5 in an attempt to more clearly define that the catalyst metal comprises a layer in a catalytically effective thickness on the slag trap particle surfaces. Support for claim 5 is found at page 12 of the specification. An example of a type of slag trap particle coated with a layer of catalyst is provided in the next to last paragraph on page 12 of the specification. In view of the amendment to claim 5, reconsideration and withdrawal of this rejection is respectfully requested.

The Office Action rejects claim 23 under 35 U.S.C. § 112, second paragraph, on the grounds that claim 12 is indefinite because it contains multiple ranges. Accordingly, Applicant has amended claim 12 in order to remove the second claimed range, thus rendering this rejection moot.

IV. CLAIM REJECTIONS UNDER 35 U.S.C. § 103

The Office Action rejects claims 1-6 and 8-16 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,149,745 to Matsuda et al. in view of U.S. Patent No. 3,929,530 to Niles. In response, Applicants will show that neither Matsuda et al. nor Niles teach or suggest a composition that includes "slag trap . . . particles formed by a gas phase reaction so as to have a specific surface area of at least about 40 m^2g", as recited in claim 1.

In making this rejection, the Office Action relies on the unsupported assumption that "[t]he surface area of the slag trap is an inherent property of the composition of Matsuda". However, the Office Action overlooks the fact that, whereas claim 1 recites "slag trap particles", Matsuda et al. discloses the use of a "ceramic whisker or fiber". Col. 2, line 18. The "ceramic whisker or fiber" disclosed in Matsuda et al. is clearly not a "particle" by the very terms of Matsuda et al. Col. 2, lines 50-65. In connection with this, Matsuda et al. teaches the criticality of using ceramic whiskers or fibers having specific dimensions of length, diameter, and aspect ratio. Col. 2, lines 57-65. Matsuda et al. also teaches the undesirability of using ceramic particles instead of whiskers and fibers having an aspect ratio of 3-2000: "a particulate one is notably reduced in a scavenging effect of a solid residue since it is not arranged in a steric network form" like a whisker or fiber having a higher aspect ratio. Col. 2, lines 60-63. Thus, Matsuda et al. appears to teach away from the use of particulate ceramic materials because they are, according to Matsuda et al., "notably reduced in a scavenging effect".

Moreover, the ceramic whiskers or fibers of Matsuda et al. are incapable of providing the same scavenging function provided by the "slag trap particles" recited in claim 1 of the present application precisely because solid whiskers or fibers of the dimensions disclosed in Matsuda et al. do not have anywhere near the specific surface area as the slag trap particles used in the

compositions of the present invention. By their very nature, ceramic fibers and whiskers are monocrystals that have a solid, rather than a porous, structure. In contrast, the slag trap particles according to the invention have a porous structure (*i.e.*, a "large inner surface"), thereby greatly increasing their specific surface area. *See* Specification, p. 10.

Moreover, the exemplary slag trap particles disclosed in the present application have a much higher specific surface area compared to the ceramic whiskers and fibers of Matsuda et al. due to their relatively small size. It is a well-known scientific fact that specific surface area increases geometrically with decreasing particle size. In contrast to the fibers and whiskers of Matsuda et al., which have a preferred length of 5-500 microns and a diameter of 0.1-10 microns, col. 2, lines 58-59, Applicants have informed the undersigned attorney that the exemplary slag trap particles disclosed in the present application have particle size diameters of only about 0.013 micron (Aluminiumoxid C of Degussa AG), 0.021 micron (Titanoxid P25 of Degussa AG), and 0.030 micron (VP Zirkonoxid of Degussa AG). Therefore, the slag trap particles, in addition to having a porous structure, have a much higher specific surface area compared to the ceramic whiskers or fibers of Matsuda et al. by virtue of their smaller size.

In view of the foregoing, Applicants submit that Matsuda et al. neither teaches nor suggests a composition that includes "slag trap particles". Instead, Matsuda et al. teaches the criticality of using "ceramic whisker or fiber" rather than particles, even teaching the undesirability of particles. Niles is of no help in salvaging this rejection because Niles neither teaches nor suggests a propellant suitable for use in automobile air bags, let alone one that includes "slag trap particles". For this reason alone, the Office Action fails to state a *prima facie* obviousness rejection relative to claims 1-6 and 6-16.

Moreover, the Office Action is incorrect in its assumption that "[t]he surface area of the slag trap is an inherent property of the composition of Matsuda et al." First, the Office Action has provided no evidence in support of this assumption. Second, Applicants have offered ample evidence that rebuts it. For this additional reason, claims 1-6 and 6-16 are believed to be patentable over the combination of Matsuda et al. and Niles.

The Office Action further rejects claims 1-6, and 8-12 and 16 under 35 U.S.C. § 103(a) as being unpatentable over German Patent No. 4,411,654 (hereinafter "DE '654") in view of Niles. In making this rejection, the Office Action erroneously asserts that DE '654 discloses a composition that comprises "titanium dioxide with a specific surface area of more than 8 m^2g."

Applicants, whose first language is German, have reviewed DE '654 and have informed the undersigned attorney that DE '654 contains no such teaching relative to titanium dioxide. Whereas DE '654 does, in fact, disclose the use of various metal oxides, such as titanium dioxide, manganese dioxide, cuprous oxide, ferric oxide, and zinc oxide, DE '654 only teaches that ferric oxide (Fe_2O_3) has a specific surface area of more than 8 m^2g. Page 2, lines 48-50. Consistent with this, Example 1 discloses a composition that includes 103.4 g Fe_2O_3 having a specific surface area of 10 m^2g. Page 3, lines 3-4. For this reason alone, Applicants submit that DE '654 neither teaches nor suggests the use of "slag trap particles" of the type recited in claim 1. Niles is of no help in salvaging this rejection because, as discussed above, it neither teaches nor suggests the use of a propellant composition suitable for use in air bags, let alone one having the slag trap particles recited in claim 1. For this reason alone, Applicants believe that the Office Action fails to state a *prima facie* obviousness rejection relative to claims 1-6, 8-12 and 16.

Moreover, whereas DE '654 discloses ferric oxide particles having a specific surface area "greater than 8 m^2g", this is not the same as disclosing "slag trap particles" having "a specific

surface area of at least about 40 m^2g" as recited in claim 1. Instead, Applicants submit that DE '654 fails to enable the use of slag trap particles having a specific surface area of at least about 40 m^2g. Although DE '654 discloses ferric oxide particles having a specific surface area "greater than 8 m^2g", DE '654 does not say how much greater. In its only working example, DE '654 discloses ferric oxide particles having a specific surface area of 10 m^2g, which gives some hint as to what DE '654 meant by ferric oxide particles having a specific surface area "greater than 8 m^2g." It objectively appears that DE '654 meant "a little greater." DE '654 does not, however, suggest the use of slag trap particles having a minimum specific surface area that is 5 times greater than 8 m^2g and 4 times greater than the only working example. For this additional reason, Applicants believe that claims 1-6, 8-12 and 16 are patentable over the combination of DE '654 and Niles.

V. NEW CLAIMS

Applicants have added new claims 17-23 in order to more fully claim what they regard as their invention. New dependent claims 17 and 18 are derived from claim 2 and recite the more preferred ranges that were deleted from original claim 2 in Preliminary Amendment "A". New dependent claim 19 is derived from claim 8 and recites the more preferred range that was deleted from original claim 8 in Preliminary Amendment "A". New dependent claim 20 is derived from claim 12 and recites the more preferred range that was deleted from original claim 12 in the current amendment. New dependent claim 22 is derived from claim 15 and recites the more preferred range that was deleted from original claim 15 in Preliminary Amendment "A". Accordingly, no new matter has been added by these claims.

New independent claim 22 is based on claim 1, but further limits the "slag trap particles" to "highly dispersed" particles, as currently found in claim 9. This limitation further distinguishes over the prior art of record because none of the references teach or suggest the use of "slag trap particles" of any kind, let alone "highly dispersed" particles (*i.e.*, particles that have a high inner surface area and are therefore highly porous).

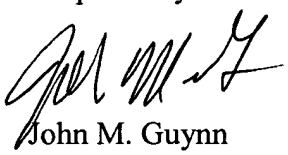
New independent claim 23 is based on new claim 22, but further recites that "a portion of the particles include a layer of platinum metal or a metal alloy of platinum metals or copper in a catalytic effective thickness." Support for this limitation is found at page 12 of the specification and in claim 5. Claim 23 further distinguishes over the prior art of record because none teach or suggest the use of slag trap particles that also include a catalytically effective layer of a catalyst on their surface. Whereas Niles discloses the use of platinum and other catalysts, they are not found as a layer on the surface of slag trap particles, let alone of the type recited in claim 23.

VI CONCLUSION

In view of the foregoing, Applicants believe the application is in allowable form. In the event that the Examiner finds any remaining impediment to the prompt allowance of this application, which could be clarified by a telephonic interview, or which is susceptible to being overcome by means of an Examiner's Amendment, the Examiner is respectfully requested to initiate the same with the undersigned attorney.

Dated this 23rd day of April 2003.

Respectfully submitted,



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